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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,186	09/11/2003	Ronald Scott Beckley	A01477	5800
21898 7590 01/09/2009 ROHM AND HAAS COMPANY PATENT DEPARTMENT 100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399				
EXAMINER BERNSHTEYN, MICHAEL				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
01/09/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/660,186

**Applicant(s)**

BECKLEY ET AL.

**Examiner**

MICHAEL M. BERNSTEYN

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 11-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This Office Action follows a response filed on December 8, 2008. No claims have been amended, cancelled or added.
2. Applicant's arguments, see the remarks, filed on July 3, 2007, with respect to the rejection(s) of claim(s) 1-6 and 11-24 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the final rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Straw (U. S. Patent Application Publication 2003/0165701).
3. Claims 1-6 and 11-24 are pending.

***Claim Rejections - 35 USC § 103***

4. The text of this section of Title 35, U.S.C. not included in this action can be found in a prior Office Action.
5. Claims 1-6, 11-20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irie et al. (U.S. Patent 5,959,028) in view of Straw (U. S. Patent Application Publication 2003/0165701).

Irie discloses a resin composition curable through a Michael reaction between (a) a component having a plurality of  $\alpha$ ,  $\beta$ -unsaturate carbonyl groups and (b) a component having a plurality of activated methylene group in the presence of a catalyst is disclosed. The activated methylene component is a polymer of an asymmetric malonate ester in which one of carboxyl groups is esterified with an alkanol while the other

carboxyl group is esterified with hydroxyalkyl (meth) acrylate or polyoxyalkylene glycol mono(meth)acrylate (abstract).

With regard to the limitations of claims 1-6 and 11-20, Irie discloses curable resin composition comprising:

(a) a component containing a plurality of  $\alpha,\beta$ -ethylenically unsaturated carbonyl groups in the molecule;

b) an acrylate polymer containing a plurality of malonate-terminated pendant groups in the molecule; and

(c) a catalyst capable of promoting the Michael reaction (col. 2, lines 10-15).

Component (a) is a compound or polymer having a plurality of ethylenic unsaturations between carbon atoms at the  $\alpha$  and  $\beta$  positions relative to a carbonyl group. Typical examples of such compound are **acrylic or methacrylic** (hereinafter collectively referred to as "(meth) acrylic") **esters of polyhydric alcohols** such as ethylene glycol di(meth)acrylate, diethylene glycol di(meth) acrylate, propylene glycol di(meth)acrylate, neopentyl glycol di(meth)acrylate, trimethylolpropane tri(meth) acrylate, glycerol tri(meth)acrylate, pentaerythritol tetra(meth)acrylate and the like.

Further examples of component (a) include polyether acrylate resins such as **polyethylene glycol di(meth) acrylate**, etc. (col. 3, lines 30-33).

When component (a) is a resin, its molecular weight ranges between 400 and 100,000, preferably between 600 and 10,000, and the alkenyl equivalent weight ranges between 100 and 10,000, preferably between **100 and 1,000**, which is within the claimed range (col. 3, lines 36-39).

Component (b) may be produced by copolymerizing a malonate-terminated acrylate monomer with a copolymerizable acrylic and/or non-acrylic monomer as exemplified in connection with component (a) (col. 3, lines 44-47). The malonate-terminated acrylate monomers have the formula, which is substantially identical to formulas in claim 12 (col. 3, lines 52-57).

Examples of copolymerizable acrylic monomers include alkyl (meth)acrylates such as methyl, ethyl, propyl, n-butyl, isobutyl, t-butyl, 2-ethylhexyl or lauryl (meth)acrylate; hydroxyalkyl (meth)acrylates such as 2-hydroxyethyl (meth) acrylate; aryl or aralkyl (meth)acrylates such as phenyl or benzyl (meth)acrylate; and other acrylic monomers such as acrylamide, methylene-bis-acrylamide or acrylonitrile. Examples of copolymerizable non-acrylic monomers include styrene,  $\alpha$ -methylstyrene, itaconic acid, maleic acid, vinyl acetate and the like (col. 4, lines 4-13).

Component (c) of the resin composition of the present invention may be a strong base. Examples thereof include **alkali metal hydroxide** such as sodium hydroxide or potassium hydroxide; **alkal metal alkoxide** such as sodium methoxide or potassium ethoxide; quaternary ammonium hydroxides such as tetrabutylammonium hydroxide, etc. (col. 4, lines 25-30).

The proportions of component (a) and component (b) in the curable resin composition of the present invention generally lie between **2:1 and 1:2**, preferably between 1.5:1 and 1:1.5 relative to the double bond and the activated methylene to be added thereto. The proportion of component (c) may range generally between 0.1 and 10.0 equivalent %, preferably between 0.2 and 5.0 equivalent % based on the sum of

component (a) and component (b), which are within the claimed ranges (col. 6, lines 11-18).

With regard to the limitations of claims 1 and 21-24, Irie does not disclose that the curable mixture comprises 5% or less by weight non-reactive volatile compounds.

Straw discloses that the coating composition need have little or no volatile organic solvent to achieve a viscosity suitable for spray application (page 1, [0003]). Straw discloses that the volatiles should be removed, for instance under vacuum (page 4, [0039]).

Both references are analogous art because they are from the same field of endeavor concerning curable Michael addition compositions.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made employ little or no volatile compounds as taught by Straw in Irie's resin composition curable through a Michael reaction in order to achieve a viscosity suitable for spray application (US'701, page 1, [0003], page 4,[0039]), and thus to arrive at the subject matter of instant claim 1 and dependent claims 22-24.

In the absence of showing criticality in the specification of maintaining the amount of 2% or less by weight non-reactive volatile compounds, based on the total amount of curable mixture, it is the examiner position to believe that the combined Irie's and Straw's curable mixture characterized by exactly the same reactive equivalent ratio and the same compounds, such as multi-functional Michael donor, multi-functional Michael acceptor and an anion of a Michael donor, each of them has molecular weight

within the claimed ranges, would be substantially identical to the instant claimed curable mixture.

It is worth to mention that Applicants can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results.

6. Claim 21 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Irie et al. (U. S. Patent 5,959,028) and Straw (U. S. Patent Application Publication 2003/0165701) as applied to claims 1-6, 11-20 and 22-24 above and further in view of Leake (U. S. Patent 6,521,716).

With regard to the limitations of claim 21, that the combined Irie's and Straw's teaching does not disclose that the curable mixture does not contain any of the catalysts usually used for Michael addition reactions.

Leake discloses that the reaction mixture in Michael reaction becomes less polar during curing, and in a coating the affinity for water should consequently decrease as curing progresses. In some cases, a water-soluble polymer/crosslinker system can be transformed into a water-resistant cured coating upon crosslinking. There is, however, need for Michael curing coatings, which cure more rapidly, particularly at ambient

temperature, and/or are capable of curing without the need for powerful alkaline catalysts (col. 1, line 67 through col. 2, line 9). Leake exemplifies that PPDIDC and EEMTCH were cured without catalyst under the conditions described in Example 25 and formed a tack-free film in 48 hours (Example 26, col. 32, line 50 through col. 33, line 15).

All these references are analogous art because they are from the same field of endeavor concerning new coating resin composition curing by Michael addition reaction.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the curing without the need for powerful catalysts as taught by Leake in combined Irie's and Straw's curable resin composition for coating in order to obtain Michael curing coating which cure more rapidly, particularly at ambient temperature (US'716, col. 2, lines 5-8), and thus to arrive at the subject matter of instant claim 21.

### ***Response to Arguments***

7. Regarding Applicants arguments that Leake discloses a composition "curable by Michael reaction" that contains one or both of a "doubly activated" Michael acceptor (col. 3, line 55) and a Michael donor that is "substantially more active" than common Michael donors like acetoacetates, malonates, or amines (eel. 8, lines 42-46), and thus Leake's disclosure is limited to certain specific Michael ingredients that are more reactive than normal, it would not be obvious to combine Leake's teachings with those of Irie (page 7), it is noted that these references are analogous art because they are



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from the same field of endeavor concerning new coating resin composition curing by Michael addition reaction. It is further noted that "The motivation in the prior art to combine references does not have to be identical to that of the applicant to establish obviousness, i.e. it is not required for a finding of obviousness that motivation of the skilled artisan be the same as an applicant motivation", *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1312 (Fed. Cir. 1996) (holding there is sufficient motivation to combine teachings of prior art to achieve claimed invention where one reference specifically refers to the other).

Therefore, it is well settled that for a finding of obviousness under § 103 the prior art need not disclose the same motivation as disclosed by an applicant.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL M. BERNSHTEYN whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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